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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,752	04/16/2004	Romeo Emmanuel P. Alvarez	APS01-002B	1220
7590	02/21/2006		EXAMINER	
George O. Saile 28 Davis Avenue Poughkeepsie, NY 12603			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/826,752	Applicant(s) ALVAREZ, ROMEO EMMANUEL P.	
	Examiner James M. Mitchell	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-29 and 50-58 is/are pending in the application.
- 4a) Of the above claim(s) 50-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/20/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicant's election filed December 21, 2005.

Election/Restrictions

2. Claims 50-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply¹ filed on December 21, 2005.
3. Applicant's election with traverse of claims 50-58 in the reply filed on December 21, 2005 is acknowledged. The traversal is on the ground(s) separate searches would be costly to applicant, and that the field of search must necessarily cover both species. This is not found persuasive because the financial burden has no bearing on the statutory requirement that only one invention may be claimed per patent application. In regards to applicant's claim that restriction should be withdrawn, because the search is in the same field, examiner disagrees. Because the field is not only defined by class and subclass, but the actual inquiry needed to find the invention, a different search query would be needed to find a device with a second predetermined distance **less** than the first with **reflowable material on an etch resistant layer** and on the side of conductors compared to "a second predetermined distance **greater** than the first...reflowable material on free ends of conductor..." Pursuant to the requirement

¹ Examiner acknowledges applicant's cancellation of claims 1-20 and 30-49 in its filing under 37 CFR 1.53(b). However pursuant to 37 CFR 1.121 the current status of all of the claims in the

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set forth in M.P.E.P 800, the requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 21-24 and 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakurai et al. (U.S. 2001/0040290).

6. Sakurai (Fig. 1, 2, 12) discloses:

(cl. 21) a wafer level chip scale package comprising; a semiconductor die (10) having a plurality of pads (12) on a surface; conductors (90) coupled to and extending a first predetermined distance from the surface of the semiconductor die; an etch resistant layer (92) on free ends of the conductors; a layer of insulation (14) on the surface, the layer of insulation having an exposed surface (e.g. exposing surface of pad; Fig. 2b) a second predetermined distance from the surface of the semiconductor die, wherein the second predetermined distance is less than the first predetermined distance; and reflowable material (44) attached to the etch resistant layer and to at least portions of side surfaces of substantially all of the conductors (Fig. 12b);

(cl. 22) wherein the conductors comprise copper conductors (Par. 0103);

application, including any previously canceled or withdrawn claims must be given. If applicant's fails to correctly indicate the correct status of each claim, the application will be held to be an intentional non-responsive.

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- (cl. 24) wherein the etch resistant layer comprises a layer of gold (0145; Par., 160);
- (cl. 26) wherein the thickness of the layer of gold is less than the difference between the first predetermined distance and the second predetermined distance (Fig 12b);
- (cl. 27) wherein the layer of insulation comprises a material polyimide (Par. 0097);
- (cl. 28) the reflowable material comprises solder (0144);
- (c. 29) wherein the solder comprises eutectic solder (Par. 0147).

7. With respect to the process limitation of claim 23 that copper is "plated," the prior art structure is the same as the claimed invention. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- 8. Claims 21-26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Jin (U.S. 2003/0219966).
- 9. Jin (Fig. 12, 13) discloses:

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(cl. 21) a wafer level chip scale package comprising; a semiconductor die (10) having a plurality of pads (12) on a surface; conductors (28) coupled to and extending a first predetermined distance from the surface of the semiconductor die; an etch resistant layer (32) on free ends of the conductors; a layer of insulation (14) on the surface, the layer of insulation having an exposed surface (e.g. exposing surface of pad; Par. 0028) a second predetermined distance from the surface of the semiconductor die, wherein the second predetermined distance is less than the first predetermined distance; and reflowable material (36) attached to the etch resistant layer and to at least portions of side surfaces of substantially all of the conductors (Fig. 12);

(cl. 22) wherein the conductors comprise copper conductors (Par. 0048);

(cl. 24) wherein the etch resistant layer comprises a layer of gold (Par. 0050);

(cl. 26) wherein the thickness of the layer of gold is less than the difference between the first predetermined distance and the second predetermined distance (Fig 12);

(cl. 28) the reflowable material comprises solder (Par. 0054);

(c. 29) wherein the solder comprises eutectic solder (CLM 23 of Jin).

10. With respect to the process limitation of claim 23 that copper is "plated," the prior art structure is the same as the claimed invention. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (U.S. 2001/0040290) in combination with Jin (U.S. 2003/0219966).

13. Sakurai discloses the elements stated in paragraphs 6 and 7 of this office action, but does not disclose use of a combination of nickel and gold layers under its reflowable material.

14. Jin (Fig .12) utilizes of a combination of nickel and gold layers (30,32) under its reflowable material (36).

15. It would have been obvious to one of ordinary skill in the art to incorporate nickel with the gold of Sakurai in order to improve pitch as taught by Jin (Par. 0009-0014)

16. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jin (U.S. 2003/0219966) in combination with Sakurai (U.S. 2001/0040290).

17. Jin discloses the elements stated in paragraphs 9 and 10 of this office action and further a passivation film (14; Par. 0083), but does not explicitly disclose that its passivation is polyimide.

18. Sakurai (14) utilizes polyimide for a passivation film (Par. 0097).

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19. It would have been obvious to one of ordinary skill in the art to incorporate a polyimide film on the surface of Jin as taught by Sakurai, in order to provide a passivation layer as required by Kin (Par. 0083).


Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
February 9, 2006


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800